

AMENDMENT UNDER PCT ARTICLE 19

WHAT IS CLAIMED IS:

5        1.     (Amended) A method for cleaning a liquid ejector including a liquid ejection head for ejecting liquid from a nozzle, the method including:

         sealing the liquid ejection head with a cap means;  
and

10        generating negative pressure with a gear pump connected to the cap means, and discharging fluid from the liquid ejection head with the negative pressure, the method being characterized by:

         suctioning fluid from the cap means with the gear  
15        pump so that a suction amount of the fluid per unit time becomes equal to a first suction amount in order to discharge fluid from the nozzle; and

         continuously following said suctioning, suctioning fluid from the cap means by changing the suction amount  
20        of the fluid per unit time from the first suction amount to a smaller second suction amount.

         2.     (Amended) A liquid ejector comprising:

         a liquid ejection head including a nozzle for  
25        ejecting a liquid;

         a cap means for sealing the liquid ejection head;  
         a gear pump, connected to the cap means, for  
generating negative pressure and discharging fluid out  
of the liquid ejection head with the negative pressure  
30        in a state in which the cap means seals the liquid  
ejection head, the liquid ejector being characterized in  
that the liquid ejector:

         suctioning fluid from the cap means with the gear pump  
so that a suction amount of the fluid per unit time  
35        becomes equal to a first suction amount in order to

discharge fluid from the nozzle; and

continuously afterwards, suction fluid from the cap means by changing the suction amount of the fluid per unit time from the first suction amount to a smaller  
5 second suction amount.

3. (Amended) The liquid ejector according to claim 2, wherein the gear pump is driven so that the suction amount per unit time becomes equal to the first suction  
10 amount in order to discharge fluid from the nozzle, and continuously afterwards, is driven so that the suction amount per unit time becomes equal to the second suction amount per unit time, and then stops.

15 4. (Amended) The liquid ejector according to claim 2, wherein the gear pump is driven at a first rotation speed so that the fluid in the cap means is suctioned in the first suction amount, and continuously afterwards, driven at a second rotation speed, which is lower than  
20 the first rotation speed, so that the fluid in the cap means is suctioned in the second suction amount.

5. The liquid ejector according to any one of claims 2 to 4, wherein the gear pump includes a housing  
25 and two gears accommodated in the housing.

6. The liquid ejector according to any one of claims 2 to 5, further comprising:

a detecting means for detecting an increase and  
30 decrease in load of the gear pump caused by a flow of fluid into the gear pump and a flow of fluid out of the gear pump;

wherein the gear pump changes the suction amount per unit time from the first suction amount to the second  
35 suction amount after the detecting means detects an

increase in the load of the gear pump.

7. The liquid ejector according to any one of claims 2 to 6, further comprising:

5 a flow passage for guiding liquid to the nozzle; and  
a valve device arranged upstream from the nozzle in the flow passage;

wherein the valve device includes a pressure chamber, for storing liquid, and a flexible member,  
10 displaced in accordance with a pressure difference between an interior and exterior of the pressure chamber, and the valve device opens and closes based on the displacement of the flexible member.

15 8. A method for cleaning a liquid ejector including a liquid ejection head for ejecting liquid from a nozzle, the method comprising:

sealing the liquid ejection head with a cap means;  
generating negative pressure with a gear pump  
20 connected to the cap means and suctioning fluid from the cap means in a first suction amount per unit time with the negative pressure;

determining whether or not fluid has been discharged from the nozzle; and

25 changing the suction amount per unit time from the first suction amount to a smaller second suction amount when determining that fluid has been discharged from the nozzle.